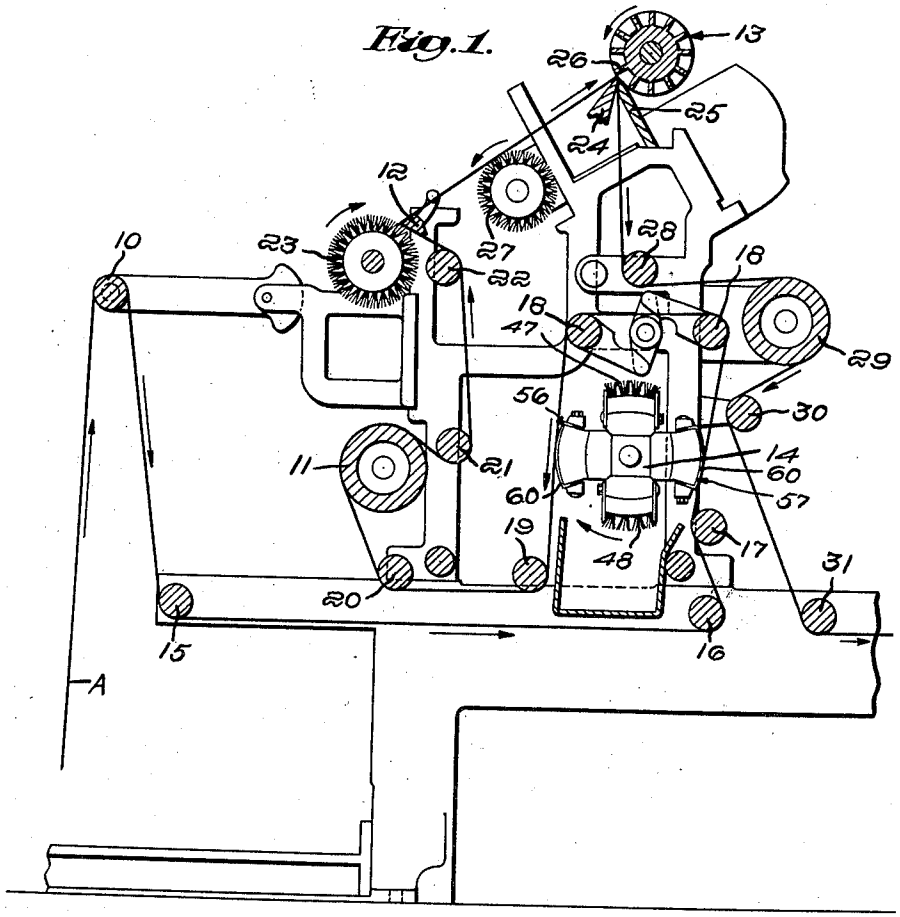
Dec. 15, 1942. W. N. HADLEY 2,305,526

CLOTH FINISHING MACHINE

Filed Aug. 2, 1940 2 Sheets-Sheet 1

Fig. 1.



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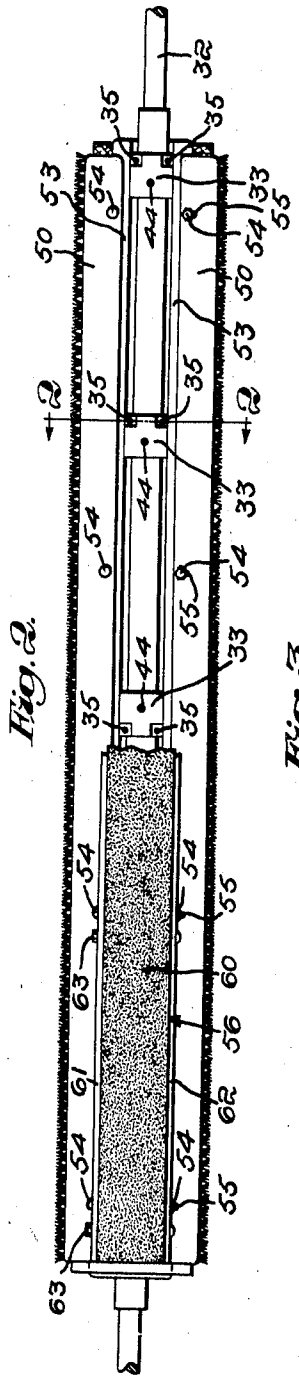


Fig. 2.

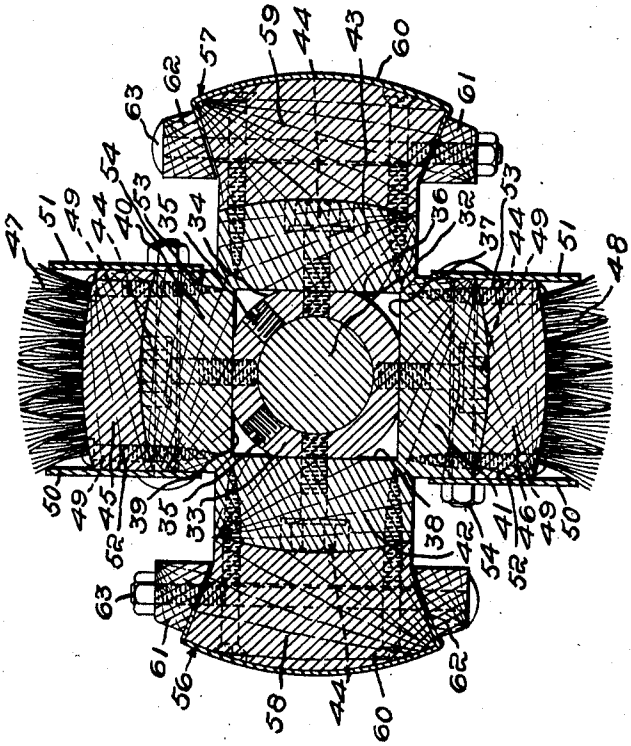


Fig. 3.

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CLOTH FINISHING MACHINE

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Application August 2, 1940, Serial No. 349,857

7 Claims. (Cl. 26—15)

This invention relates to a cloth finishing machine and more especially to a machine for finishing the faces of cloth.

In the routine methods of finishing cloth such as woolens or worsteds, and cloths made of spun rayon and felts, the cloth, after passing through a fulling mill wherein it is felted and shrunk to give it body and weight, is passed successively through polishing and sanding machines prior to the shearing of the cloth faces. Although the word "polishing" is commonly used by those versed in the art, a more accurately descriptive term would be "clearing out and raising," and where I use the former word in the following description, it should be understood that clearing out and raising is meant and it should be further understood that this polishing or clearing out and raising is accomplished by brush lags clothed with any very stiff brushing material. During the treating of the cloth in the fulling mill, wherein moisture and heat are the prime elements effecting the fulling, there is a felting or interlocking of the fibres and scales on the fibres that cover the surfaces of the cloth, which causes the shrinkage itself. A felted mat is thus formed on the surfaces which must be cleared out to bring out the pattern in the weave. To effect this result it has heretofore been customary to pass the cloth through a machine having a plurality of rotating cylinders provided with six arm lags set with stiff bristles or preferably of mixed bristles and fibrous whalebone, to give added stiffness, which when applied to the surfaces of the cloth, give to it a rapid beating and vibratory motion while "digging" up the felt down between the threads constituting the weave. There results not only a softening and limbering up of the cloth, producing a velvety feel therein, but the fibres and felt are cleared out and raised so that they may be sheared in a cloth shear to which the cloth is subsequently presented. It is also customary to pass the cloth through a machine provided with a plurality of rotating cylinders having sand or abrasive lags thereon which, through engagement with the cloth surfaces tend to separate the fibres so raised, breaking up the felted surface so the shear will more effectively do its work. Where both polishing and sanding are resorted to, the operation of sanding is depended on to scuff up or scratch the surfaces of the cloth while the polishing operation digs deeper to a new surface.

Heretofore it has been customary to sand and polish on a separate machine or machines, the cloth being run through these machines several times then passed through a cloth shear, then taken back to the sanding and polishing machines for several more runs whereupon the cloth is again sheared. These operations may be repeated several times. I have found that greatly improved results may be obtained if the goods are subjected to a simultaneous sanding and polishing operation, that is to say, an operation wherein the fibres and felt brought up by the bristles of the lags of the polishing cylinder are immediately and preferably simultaneously acted on by the abrasive surfaces of the sanding lags. Moreover if the cloth acted on in this manner is immediately passed through a cloth shear the usual handling of the cloth between the sanding, polishing and shearing machines is avoided and the cloth is not only finished in a speedier manner but with a brighter look, the soft raggy surface resulting from the usual polishing and sanding before shearing being avoided. In accordance with the above, the more general object of the invention is to bring about a form of machine wherein cloth may be given a superior surface finish than has heretofore been possible with the existing types of cloth finishing machinery.

A further object of the invention resides in the production of a cloth shear having embodied therein an arrangement for subjecting cloth to a simultaneous sanding and polishing operation as the cloth passes to the shearing mechanism.

A feature of the invention resides in a form of combined polishing and sanding cylinder capable of embodiment in a machine having cloth feeding means to effectively prepare the cloth for the shearing of the cloth faces.

To these and other ends the invention consists in the novel features and combination of parts to be hereinafter described and claimed.

In the drawings:

Fig. 1 is a sectional view of a cloth finishing machine having embodied therein the features of the invention.

Fig. 2 is a view of a combined polishing and sanding cylinder forming a part of the machine shown in Fig. 1, and

Fig. 3 is a cross-sectional view of the cylinder shown in Fig. 2.

In the practice of the invention according to the form thereof illustrated in the drawings, I have adopted a general arrangement of framework and parts somewhat similar to a common form of cloth shear construction such as that illustrated in Patent No. 1672780 but it will be understood by those skilled in the art that the details of the machine may be varied considerably from those shown without departing from

the spirit of the invention. Moreover, it will be understood that although a single machine is shown herein in actual practice a tandem of such machines will normally be used the cloth passing directly from one machine into the next.

Referring at present to Fig. 1 of the drawings, the course of the cloth through the machine, where it is subjected to the operation of the different working parts, is indicated by the line A and, as so indicated, the cloth enters the machine if desired from an underneath scray, being guided over the upper guide roll or bar 10; thence, in the usual cloth shear, it would pass around the feed roll 11, over the cloth rest 12 to the shearing couple 13 and then to a laying brush mounted for rotation on an axis coinciding with the axis of the combined sanding and polishing cylinder 14 to be hereinafter described. Herein, the cloth passes, however, first to the combined sanding and polishing cylinder 14 through the intermediary of guide rolls or bars 15, 16 and 17, the cloth being acted on by the cylinder 14 as it passes from the guide roll or bar 17 over the guide rolls or bars 18 and thence to the guide roll or bar 19. The rolls 18 are mounted in any preferred or usual manner for simultaneous adjustment and in cooperation with rolls 17 and 19 form two tangential stretches of cloth between which the combined sanding and polishing cylinder 14 is received, the adjustment of the rolls or bars 18 permitting the cloth to be presented to the operative surfaces of the cylinder with the desired tension of contact.

From the guide roll or bar 19 the cloth passes over the guide roll or bar 20 to the feed roll 11 thence over the guide rolls or bars 21 and 22 to the cloth rest 12 where the surface of the cloth previously subjected to the action of the sanding and polishing cylinder 14 is now engaged by the revolving bristle brush 23 to uniformly raise the nap so the fibres will all be presented to the shear at the same angle. The cloth thereafter passes from the cloth rest 12 to the cloth rest 24 whereon the surface of the cloth is sheared by the action of the shearing couple consisting of the usual ledger blade 25 and fly blade 26, the under side of the cloth, as it passes from the rest 12 to the rest 24 being engaged by the revolving bristle brush 27 which clears foreign matter therefrom. From the shearing couple the cloth passes over guide roll or bar 28 thence around feed roll 29 and over guide rolls or bars 30 and 31 to reach the next machine of the tandem or to such other operation as the cloth is to be subjected to.

The combined sanding and polishing cylinder 14, as shown herein, (Figs. 2 and 3) includes four lags and is provided with a shaft 32, on which a plurality of spaced square collars 33 are mounted, each collar having one of the ends turned off to form faces 34 through which set screws 35 are threaded to contact the shaft 32. Extending longitudinally of the cylinder and mounted on the external flat faces 36, 37, 38 and 39 of the collars 33 are mounting blocks 40, 41, 42 and 43 which, for the sake of lightness, may be conveniently formed out of wood or the like, each block being secured to the collars 33 by means of cap screws 44 which pass through the blocks and are threaded into the collars. As shown, the peripheral edges of the blocks are turned to form cylindrical surfaces on which, in the case of blocks 40 and 41, the backs 45 and 46 of brushes 47 and 48 are supported, the brushes 47 and 48, in this instance, being diametrically opposite one another. The brushes are preferably set with a mixture of stiff bristles and fibrous whalebone and are attached to the blocks by screws 49. Plates 50 and 51 are attached to the side faces 52 and 53 of the blocks by bolts 54, the holes 55 in the plates being elongated transversely thereof so that the plates may be adjusted in a radial direction towards or away from the outer ends of the tufts of bristles, at the side edges of the brushes, to give a light or heavy effect to the bristles and to permit adjustment for wear.

Mounted on the blocks 42 and 43 diametrically opposite one another and between the brushes 47 and 48 are sand lags 56 and 57 which consist of pads 58 and 59 extending longitudinally of the cylinder, each pad having an external cylindrical surface covered with garnet paper or other abrasive material 60, the side edges of the paper being turned inwardly and held in place by the side clamps 61 and 62, bolts 63 passing through the clamps and pads to hold the paper in place. It will be apparent that the brush and sand lags alternate with one another circumferentially of the cylinder and although four lags are shown herein the number thereof may of course be varied.

In the operation of the machine described above the combined sanding and polishing cylinder is revolved in a direction opposite to that taken by the cloth but it may be in same direction if preferred and it will be readily apparent that as each portion of the surface of the cloth is contacted alternately with the bristles and with the abrasive material the matted material imbedded in the cloth may be raised to the surface thereof and scuffed over and then sheared off immediately. In this way it is possible to give the cloth a relatively light treatment by the brushes or the abrasive material whereas in the usual machine an excessive amount of brushing must take place before the sand lags are applied to the cloth otherwise the number of brushing cylinders and sanding cylinders would be so excessive as to be impractical. It will be understood that simplicity of the operation of finishing the cloth surfaces forms but one aspect of the invention the ability of the machine and more particularly the cylinder to apply a brushing effect to the goods simultaneously with the sanding thereof enabling me to produce a surface condition in the treated goods impossible in the prior types of machines. As a result the cloth may not only be carried to the cloth shear without other handling of the same, but the latter may accomplish its operation in a more efficient manner.

While I have shown and described a preferred embodiment of my invention, it will be understood that the same is not limited to the precise details shown and described but is capable of variation and modification within the spirit of the invention and the scope of the appended claims.

What I claim is:

1. A cloth-finishing cylinder having in combination abrasive-covered lags, intervening brushing lags clad with a mixture of bristles and fibrous whalebone, and plates extending axially alongside and in contact with the outside bristles of the finishing lags.

2. A cloth-finishing cylinder having in combination abrasive-covered lags, intervening brushing lags clad with a mixture of bristles and fibrous whalebone, and plates extending axially alongside and in contact with the outside bristles

of the brushing lags and adjustable radially toward and away from the outer ends of the bristles.

3. In a cloth finishing machine having shearing means, in combination, means for raising felted fibers in the cloth prior to the action of the shearing means thereon, said raising means comprising a cylinder having a peripheral operative surface partly set with stiff brushing material composed of mixed bristles and fibrous whalebone and partly set with abrasive material.

4. In a cloth finishing machine having shearing means, in combination, means for raising felted fibers on the surfaces of the cloth after entering the machine and prior to the action of the shearing means thereon, said raising means comprising a rotating supporting element, means carried on said element for brushing and raising the surface of the cloth, and mineral abrasive material carried on said element for securing the surface of the cloth.

5. In a cloth finishing machine having shearing means, in combination, means for raising felted fibers on the surface of the cloth after entering the machine and prior to the action of the shearing means thereon, said raising means comprising a rotating supporting element, a plurality of cloth-engaging brushing and raising means disposed in circumferentially spaced relation on said element and cloth-engaging mineral abrasive scouring material disposed on said element between the spaced brushing means.

6. In a cloth finishing machine having shearing means, means for raising felted fibers on the surface of the cloth after entering the machine and prior to the action of the shearing means thereon, said last named means comprising a rotating supporting element, a plurality of bristle brushes disposed on said element in circumferentially spaced relation and a plurality of abrasive pads on said element, said pads being disposed one between each pair of the spaced brushes, and plates on the axially extending sides of the brushes supporting the bristles along such sides.

7. In a cloth finishing machine for woolen fabrics having shearing means, a roll acting on a face of the cloth in advance of the shearing means and having a working surface composed of areas formed of mixed bristles and whalebone and other areas of abrasive materials, whereby the fibers of the face of the cloth are alternately raised up by the bristles and immediately and contemporaneously scoured by the abrasive materials in preparation for being shorn by the shearing means before leaving the machine.

WILFRED N. HADLEY.

CERTIFICATE OF CORRECTION.

Patent No. 2,305,526. December 15, 1942.

WILFRED N. HADLEY.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 20, claim 3, for "securing" read --scouring--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of January, A. D. 1943.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)